POISON IVY & SWAMP SUMACH

ANNIE OAKES HUNTINGTON

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POISON IVY AND SWAMP SUMACH

MARITIME IVY

C. L. Hutchinson
Newton

POISON IVY

AND SWAMP SUMACH

BY

ANNIE OAKES HUNTINGTON

AUTHOR OF "STUDIES OF TREES IN WINTER"

ILLUSTRATED WITH PHOTOGRAPHS

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BOTANICAL NOTES ON POISON IVY

Botanical Notes on Poison Ivy

Rhus radicans, L. (*Rhus Toxicodendron*, L. – Gray's M. –), a climbing or trailing woody vine; sometimes growing low, erect, and shrubby. Stems climb by aerial rootlets. **Leaves** trifoliolate; the leaflets ovate or rhombic in shape, the margins entire or sparingly toothed. Lateral leaflets sessile or short-stalked, the terminal ones stalked. **Flowers** yellowish green and small, in loose, slender, axillary panicles from one to four inches in length. Calyx commonly five-cleft. Petals five. Stamens five. Pistil one. Ovary one-ovuled. **Fruit** a waxy white or gray drupe, with one seed, remaining in clusters on the stems very late in the season. **Winter buds** naked, rusty pubescent, somewhat conical in shape. Leaf scars crescent, V- or heart-shaped, with raised edges. The twigs are light brown and finely pubescent. Pith white. **Toxic principle** a non-volatile oil, insoluble in water, called

toxicodendrol, and found throughout the plant. **Range.** *Rhus radicans* is distributed widely throughout the United States, as far west as Eastern Texas, Eastern Kansas, and Minnesota; less frequently farther west, and is replaced by *Rhus diversiloba* in California, and Western Washington and Oregon.

THE POISON IVY

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The Poison Ivy

ON the gray rocks of stone walls in the country, in and out among the bushes by the roadside, up the tall trunks of trees in the woods, even through the sand wastes of the dunes along the coast, persisting with healthy vigor under every adverse circumstance, we find that most despised of beautiful vines the poison ivy.

Its foliage is fresh and shining, and a cool, charming green in color through the hot days of summer, and in the autumn its leaves change to the richest shades of glowing scarlet, — colors which delight the most casual observer by their varying tones, yet Asa Gray, the eminent botanist, has referred to this plant as that "vile pest" the poison ivy. Its intrinsic beauty counts for nothing in the face of the distress and suffering it causes every year to so many.

THE POISON IVY

The poison ivy is commonly a climbing or trailing vine which clings to rocks, and fastens to the trunks of trees by its thick fringe of aerial rootlets, which appear at intervals along the stems. Sometimes, however, the plant assumes an upright, shrubby character, and remains near the ground, apparently relinquishing its more adventurous form of growth.

The leaves grow in threes, and are highly decorative in outline, with smooth, glistening surfaces, indescribably pleasing both in form and color. The individual leaflets vary slightly in shape, — sometimes they are ovate, and again they show a tendency to be four-sided; their margins are smooth for the most part, but occasionally the edges are relieved by irregular serrations.

The small, yellowish green flowers appear in May and June, in loose panicles along the stems, at the base of the leaf stalks. Their perfume is strong enough to produce a certain shrinking un-

LEAF OF THE POISON IVY

easiness in our minds as we inhale the fragrance, although various little insects hover about the flowers, and seem to find the nectar as sweet as that of any lilac or linden blossom.

The fruit, which ripens in the autumn, is a smooth, white, wax-like berry, and the clusters remain on the stems so late into the winter that, with the climbing rootlets, they serve as an excellent means of identification.

The plant from which I gathered the berries illustrated in the photograph on the next page, grew along an old stone wall in a bleak, wind-swept field near the sea in Rowley, Massachusetts. I picked them in March, during a heavy snow-storm; yet late in the season as it was then, and although the stems were saturated with moisture, the berries still clung so persistently that I had no difficulty whatever in handling the specimens.

The poison is found in all parts of the plant, — in the leaves, stems, roots, even in the tiny grains of pollen dust blown by the wind from the

flowers, and in old, dry twigs, thrown into barns with the hay.

A person is particularly susceptible to the poison if he comes in contact with the plant in warm weather, when the blood is overheated, and the pores of the skin are open; but cases of ivy poison occur each month of the year, and those developed in winter are just as virulent as when foliage covers the vines. The length of time between coming in contact with the plant and the first appearance of the eruption on the skin is usually four or five days, although with some people it develops from eighteen to twenty-four hours, and with others not until seven, and even nine, days have passed.

The eruption begins with redness and a burning sensation where the ivy touched the skin, soon followed by small blisters, which rapidly increase in size and number, and spread extensively, until in some cases the vesicular rash becomes confluent. The swelling and irritation are

BERRIES AND WINTER BUDS OF THE POISON IVY

so painful that the disease is frequently accompanied by fever, and even in less severe cases the discomfort is extreme.

The greatest ignorance has existed in regard to the toxic principle of the poison ivy. The cause of its ill effects has been for years purely a matter of conjecture. A volatile oil or acid, a gas, a poisonous vapor, and even bacteria have made up the fabric of the flimsy theories advanced to account for its poisonous properties. It was not until 1857 that any attempt whatever was made to isolate the active principle, and the assertion of J. Khittel, the investigator, that it was a volatile alkaloid was shortly denied by John M. Maisch. In 1865 this gentleman made various experiments with the fresh leaves of the plant, enclosed in a tin box with moistened test papers, and proved to his satisfaction that the poisonous principle was a volatile acid. He did not obtain this acid in a chemically pure state, but for thirty years or more the world seemed

well satisfied with the results of his somewhat sketchy investigations.

In 1897 Dr. Franz Pfaff published the results of a remarkable series of experiments with poison ivy and poison sumach which he conducted in the Pharmacological Laboratory of the Harvard Medical School. For the first time the research was directed upon scientific principles, and the final outcome established an entirely new and chemically sound basis for medical treatment of the poison.

By experiment Maisch's "toxicodendric acid" proved to be nothing but acetic acid, and the true poisonous principle was discovered to be a non-volatile oil. This oil was named toxicodendrol by Dr. Pfaff. It is found in the stems, branches, roots, leaves, and fruit of the plant, in greatest quantity in the leaves and fruit. Age seems to have small effect upon its poisonous action, for a sample left in an open dish for thirteen months, although partly converted into

POISON IVY FLOWERS

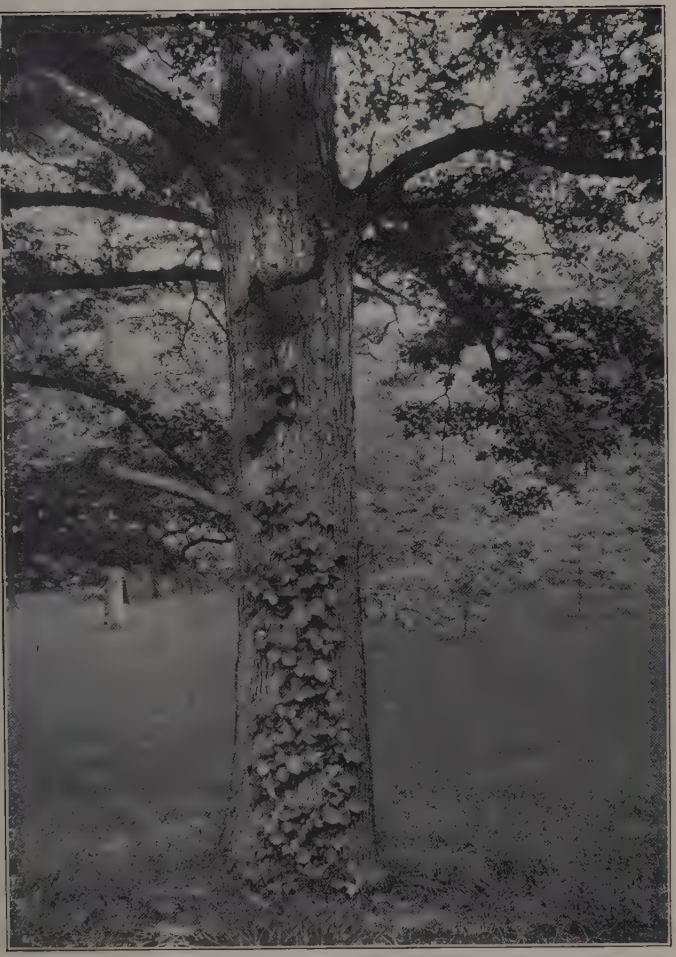
a resin, still remained just as potent as before. Old stems and branches were tried which had been kept in the laboratory over a year, and although they were perfectly dry, a fair amount of oil was extracted from them. Nor does cold weather affect its action, for the same oil was obtained from stems collected from plants which had been covered with snow for weeks, and it was as actively poisonous in its effects as if the stems had been gathered in the luxuriance of the foliage in June.

Occasionally we hear of people who seem to be entirely exempt from ivy poison. I remember an instance of a man who was fond of his garden, and who spent much time in transplanting native wild flowers and plants from the woods to his grounds, who showed his friend, with evident satisfaction, a large bed of vines, which ran over the fence in tropical profusion. He had planted them with his own hands, and was astonished when he learned from his better-

informed friend that his zeal had been expended in dragging poison ivy from its wild haunts and encouraging it to become domesticated where it ran every chance of poisoning his family and friends. He unwittingly ran the risk, but this could not be said in extenuation of the recklessness of John Maisch in his dealings with this plant.

"On one occasion," he says, "on the hills of the Wissahickon, I laid down in the midst of a beautiful specimen of *Rhus Toxicodendron*, var. *radicans*, which spread so prolifically over shrubs and trees, and through the grass beneath, that I was on all sides surrounded by its branches, leaves, and flowers; although remaining in this position for over fifteen minutes, selecting the most vigorous leaves, I escaped with no other effects than those which yielded at once to ablutions with the water of this little stream."

A curious maritime form of poison ivy is found along the Atlantic coast, growing in the



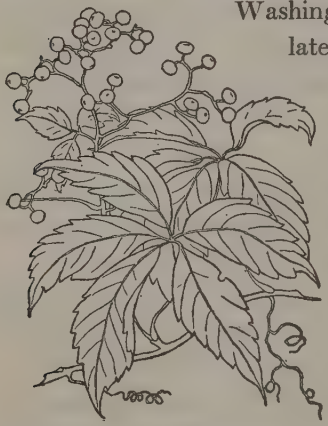
POISON IVY GROWING ON A WHITE OAK

sand and on dry banks. It sometimes covers hundreds of acres on islands, and spreads over large areas among the shifting sands of the dunes. In this variety the connecting stems are buried out of sight below the surface, and the branches rise erect out of the sand like separate plants. With its tendency to increase this ivy spreads, and forms thick plantations where scarcely any other form of vegetation can exist. The slender stems are seldom over a foot high, and the leaves are less robust than those of the climbing variety.

The poisonous properties of the maritime ivy are apparently much less active than those of the poison ivy. Many persons who suffer from coming in contact with the poison ivy seem to be unharmed after passing through thick beds where the maritime variety pushes up through the sand. This fact may be accounted for by the weakened vitality of the plant, which has expended its force in the effort to maintain life

at all in such meagre soil and in the midst of such adverse surroundings.

The poison oak (*Rhus diversiloba*), a Western species, found through California, Oregon, and Washington, is closely related to the poison ivy. It differs from this plant in its leaflets, which are thicker and smaller than those of the poison ivy, and much more round at the apex. Its poisonous effect upon the human skin is similar to that produced by the poison ivy.



THE HARMLESS WOODBINE

For some unknown reason the harmless woodbine, or Virginia creeper (*Parthenocissus quinquefolia*), is confused with the poison ivy by

many people, and falsely considered poisonous. It may readily be distinguished from the poison ivy by its leaves, which are in five leaflets instead of three, and, unlike those of the poison ivy, are long and narrow in shape and coarsely toothed; by its numerous climbing tendrils, and by its clusters of beautiful dark-blue berries in the autumn.

Although the outward appearance of the poison ivy is indeed pleasing to the eye, it should not be allowed to gain foothold on the farm or estate.

To exterminate the vine use concentrated sulphuric acid (½ teaspoonful to a stem) every three weeks in the spring, or over large areas spray with arsenate of soda (1 pound to 20 gallons of water). If boiling water is poured on the plant, it should be remembered that there is risk in getting too near, and also that the smoke from a bonfire of ivy brush is as dangerous to inhale as the pollen-laden breeze which blows off the blossoming vines in June.

BOTANICAL NOTES ON POISON SUMACH

Botanical Notes on Poison Sumach

Rhus vernix, L. (*Rhus venenata*, D. C., – Gray's M. –), a shrub with slender, clustered stems, which sometimes takes a tree-like form, and reaches a height of twenty feet, with a trunk five or six inches in diameter. Broad, rounded head, with smooth stems which are brittle with much pith. **Leaves** unequally pinnate, seven to fourteen inches long, with slender, reddish green stalks. Leaflets seven to thirteen; obovate-oblong, thin, dark green, and shining on the upper surfaces, paler beneath; without marginal teeth; midribs prominent. Smooth at maturity, but covered with a fine down on the under sides when they first unfold in the spring. **Flowers** in narrow, axillary panicles from three to ten inches long; yellowish green, with early, deciduous bracts. Petals slightly reflexed. Stamens nearly twice as long as the petals in the sterile flower, in the fertile flower not more

than half their length. **Fruit** a smooth white drupe, in long, graceful racemes, often persistent on the branches until spring. **Winter buds** sharp-pointed, covered with dark purplish scales. Terminal buds two or three times larger than the axillary ones. **Leaf scars** prominent, alternate, somewhat crescent-shaped. **Bark** on the young stems dotted with conspicuous lenticels; on the trunk thin and smooth, occasionally grooved with shallow fissures. **Toxic principle** toxicodendrol; found throughout the plant in greater quantity than in *Rhus radicans*. **Range.** From Northern New England to Northern Georgia and Alabama, westward to Northern Minnesota, Arkansas, and Western Louisiana. Common in swamps.

THE POISON SUMACH

The Poison Sumach

ON the borders of ponds, in swamps, wet thickets, and in low, moist ground, another beautiful yet poisonous member of this family is found. This is the swamp, or poison sumach, often called poison dogwood, "blushing its sins as scarlet," like the poison ivy, and luring the unwary onward by the brilliancy of its foliage in the autumn.

This shrub — the most poisonous in the United States — has alternate compound leaves attractively divided into little leaflets. The leaflets vary from seven to thirteen in number, and are arranged in a double row, with one at the apex.

The panicles of flowers are more slender than those of the poison ivy, and when examined closely the yellowish green blossoms are less conspicuous and pretty.

The clusters of fruit hang by delicate stalks in loose racemes from the stems, unlike those of the poison ivy, which are so thick-set that they look like little bunches of grapes in miniature. The berries of both species are white; those of the poison ivy have a gray cast, in contrast with those of the swamp sumach, which are tinged with yellow, like old ivory.

In winter this shrub may be recognized by its stout stems, conspicuously marked with small, dark dots, by its prominent leaf scars, and by the sharp-pointed buds, covered with purplish scales.

The poisonous effects of the swamp sumach are even more severe and painful than the poison ivy eruption. The action of the oil is identical in both species, but, according to Dr. Pfaff's experiments, it appears to exist in larger quantities in the swamp sumach. This fact accounts for the greater severity of sumach poisoning.

People are apt to get poisoned by this shrub

WINTER BUDS OF THE SWAMP SUMACH

in winter, when they go skating, and in early spring, before the leaves are out, when they are off in the woods fishing. I know a man who was badly poisoned by getting into a thicket of swamp sumach in the winter, and four months afterwards, when he put on the same cloth cap which he had worn the last time on the day of his walk through the swamp, the eruption again broke out on his forehead. We cannot be too often reminded of the fatal persistency of the poisonous oil in clinging to anything with which it has once come in contact.

It is amusing to find that Peter Kalm, the Swedish botanist, who travelled in this country in 1748, not only displayed the same reckless spirit of daring in regard to handling the swamp sumach that John Maisch exhibited a hundred years later, when he wallowed in a bed of poison ivy, but outdid him by drawing in a hapless comrade as well.

"Upon me," he says, "this ſpecies of ſumach

has never exherted its power, though I made above a hundred experiments upon myſelf with the greateſt ſtems, and the juice once ſquirted into my eye, without doing me any harm. On another perſon's hand which I had covered very thick with it, the ſkin a few hours after became as hard as a piece of tanned leather, and peeled off in the following days, as if little ſcales fell from it."

He apparently played with it once too often, for he says in another entry in his journal:

"I have tried experiments of every kind with the poiſon tree on myſelf. I have ſpread its juice upon my hands, cut and broke its branches, peeled off its bark, and rubbed my hands with it, ſmelt at it, carried pieces of it in my bare hands, and repeated all this frequently, without feeling the baneful effects ſo commonly annexed to it; but I however once experienced that the poiſon of the ſumach was not entirely without effect upon me. On a hot day in ſummer, as I

FOLIAGE AND FLOWERS OF THE SWAMP SUMACH

was in ſome degree of perſpiration, I cut a branch of the tree, and carried it in my hand for about half an hour together, and ſmelt at it now and then. I felt no effects from it, till in the evening. But next morning I awoke with a violent itching of my eye-lids, and the parts thereabouts, and this was ſo painful, that I could hardly keep my hands from it. . . . It continued almoſt for a whole week together, and my eyes were very red, and my eye-lids were with difficulty moved, during all that time. . . . I have not experienced any thing more of the effects of this plant, nor have I any deſire ſo to do."

The poison sumach closely resembles the Japanese lacquer tree, which yields the valuable varnish so much used in the decorative woodenware of that country. The lacquer tree came originally from China, but it has been extensively cultivated in Japan for more than two thousand years, and has greater commercial value than any other sumach.

When the trees are about ten years old, incisions are made in the trunk and branches, and the sap is collected several times each day. It is next poured into vats, and stirred until all excess of water has evaporated, and then either strained or mixed with sulphite of iron, oxide of iron, or indigo before being applied as a varnish.

It has been thought that our poison sumach would yield a varnish similar to that of the lacquer tree, and an experiment was tried some years ago which proved satisfactory. The sap was collected and boiled down, and was then applied to various articles, and a brilliant, jet-black coating was obtained, which was firm, and durable, and not affected by moisture.

The harmless smooth and staghorn sumachs (*Rhus hirta* and *Rhus glabra*), which clothe our rocky hillsides and upland pastures with their thick foliage, and dense clusters of upright, crimson fruit, may readily be distinguished from their poisonous sister the swamp sumach. Apart from

the fact that these two species prefer a dry or rocky soil, unlike the water-loving poison sumach, they may be identified by their leaves, which

The Innocuous Flowering Dogwood

number eleven to thirty-one leaflets, instead of seven to eleven, with margins sharply toothed instead of being smooth. The berries of both the poison ivy and swamp sumach are white; those of the smooth and staghorn sumach are a rich wine-colored crimson.

The sins of the poison sumach have been

visited upon the beautiful flowering dogwood (*Cornus florida*), which transforms our woods in June with its lovely white blossoms. The confusion has arisen entirely from the similarity of the popular names "poison dogwood" and "flowering dogwood." As the flowering dogwood is not poisonous and is related in no way to the swamp sumach, it is well to mark the distinction by dropping the pseudonyme "poison dogwood," and calling that shrub by either one of its family names.

The flowering dogwood belongs to the Cornel family, and its true flowers are surrounded by an involucre of flaring, white bracts which make the little flower clusters look like a large, single blossom. The blossoming branches are seen in flat layers of delicate white through the undergrowth of the woods, and suggest the fascinating drawings of clouds in a Japanese watercolor.

TREATMENT OF THE POISONOUS ERUPTION

Treatment of the Poisonous Eruption

SOAP, water, and a scrubbing-brush seem altogether too simple a method of treatment to advise for the painful eruption brought on by handling these two poisonous plants. Yet, if we begin with this old-fashioned country remedy and study the various methods of treatment from one generation to another, we return at last, through the most recent scientific investigations, to our original starting-point. The only effective measures are preventive ones; the only remedy is a wash which mechanically removes the poisonous oil from the skin. In this lies the sum and substance of the entire method of treatment.

In a test case which Dr. Pfaff carried on in connection with his experimental work at the Harvard Medical School, the oil of the poison sumach was applied to a man's arm on the after-

noon of October 13. The next morning ten vesicles had appeared, accompanied by redness and burning sensations. From this time the disease increased in painfulness and irritation, and continued to run its course, unchecked by the zinc oxide pastes, and carbolic vaseline and boracic acid ointments which were applied to the arm.

On October 19 the blisters became confluent and were the size of a dollar all over the arm. On October 20 the ointments were stopped and soap and water was used several times a day. The new treatment brought relief, soothing the arm, and from this date the vesicular eruption ceased spreading.

On October 21 the swelling had disappeared, and on October 23 the arm had returned to its normal size.

In this case it was proved by actual experiment that oily preparations spread the poison, and that constant washing with soap and water

removes the poisonous oil which causes the trouble. Although the soap and water treatment was applied at the height of the inflammation, the disease ceased altogether three days afterwards. The toxic principle is soluble in alcohol, and this may consequently be used if preferred. A weak solution (50 to 75 per cent) is advisable, and plenty of fresh alcohol must be applied. By absorbing the poisonous oil it becomes in itself a weak solution of the poison, and will spread the rash unless constantly renewed. Powdered sugar of lead (lead acetate) may be added to the alcoholic wash (all the alcohol will dissolve), or one part hyposulphite of soda to three parts water makes another good lotion to apply immediately after exposure. I found this an excellent wash to use after working over the specimens of poison ivy and sumach which I photographed to illustrate this little book. After a thorough cleansing the hands or arm should be bandaged as soon as the eruption makes its

appearance, and the finger nails cut short to prevent the disease from spreading.

There is consolation in knowing that even in the most severe and painful cases the poison has a limited period of action, and that at the end of two weeks' time the dejected sufferer may go forth once more into the sunlight.

GLOSSARY OF TECHNICAL TERMS

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Glossary of Technical Terms

Acetic. Having the properties of vinegar.

Aerial rootlets. Small roots, by which the plant climbs, which appear along the stems, in the open air.

Alkaloid. A vegetable principle having alkaline properties.

Alternate. One after another; said of leaves and leaf scars which are placed on the stem singly instead of in pairs or whorls.

Axillary. In or from an axil, the angle on the upper side where the leaf is attached to the stem.

Bracts. The more or less modified leaves of a flower cluster.

Buds. The undeveloped stems or flower clusters conspicuous in winter. They may be naked, or protected by scales, stipules, etc.

Calyx. The flower cup.

Cleft. Cut about half-way down.

Compound leaf. One divided into separate blades.

Conical. Cone-shaped.

Deciduous. Falling; said of leaves falling in the autumn, or of parts of a flower falling after it has blossomed.

Drupe. A stone fruit.

Entire. Without serrations, the margin whole and even.

Fertile flower. The female, or pistillate flower.

Involucre. A circle of bracts surrounding a flower cluster.

Leaflet. The separate division of a compound leaf.

Leaf scar. The scar left on the stem after the leaf has fallen.

Leaf stalk. Foot stalk of a leaf blade.

Lenticels. The little openings on young bark, through which underlying tissues appear.

Maritime. Pertaining to the sea or seacoast.

Midrib. The central or main rib of a leaf.

Non-volatile. Not passing off by evaporation.

Obovate. Ovate with the broader end towards the apex.

Ovary. The hollow, seed-bearing portion of the pistil.

Ovate. Of the shape of a hen's egg, in longitudinal section. The broader end at the base.

Ovule. The part of a flower which becomes a seed.

Panicle. A loose, compound flower cluster.

Petal. A division of the corolla. Usually the showy part of the flower.

Pinnate. When leaflets are arranged along each side of a compound leaf stalk.

Pistil. The seed-bearing organ of a flower.

Pith. The central, cellular part of a stem.

Pubescent. Covered with soft, short hairs.

Raceme. A flower (or fruit) cluster, in which the flowers on their own stalks of equal length are arranged along an elongated, central supporting stem.

Reflexed. Abruptly bent; turned downward or backward.

Rhombic. Rhomb-shaped, four-sided.

Rusty pubescent. Covered with reddish brown hairs.

Sessile. Sitting close, without a stalk.

Stamens. The fertilizing organs of a flower.

Sterile flower. The male, or staminate flower.

Terminal buds. The buds proceeding from the apex of the stems.

Toxic principle. Poisonous element.

Trifoliolate. Of three leaflets.

Vesicle. A blister.

Vesicular. Relating to vesicles.

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